



Predictions of avian Plasmodium expansion under climate change

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Abstract:

Vector-borne diseases are particularly responsive to changing environmental conditions. Diurnal temperature variation has been identified as a particularly important factor for the development of malaria parasites within vectors. Here, we conducted a survey across France, screening populations of the house sparrow (*Passer domesticus*) for malaria (*Plasmodium relictum*). We investigated whether variation in remotely-sensed environmental variables accounted for the spatial variation observed in prevalence and parasitemia. While prevalence was highly correlated to diurnal temperature range and other measures of temperature variation, environmental conditions could not predict spatial variation in parasitemia. Based on our empirical data, we mapped malaria distribution under climate change scenarios and predicted that *Plasmodium* occurrence will spread to regions in northern France, and that prevalence levels are likely to increase in locations where transmission already occurs. Our findings, based on remote sensing tools coupled with empirical data suggest that climatic change will significantly alter transmission of malaria parasites.

Source: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3553554>

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Temperature

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Europe

Climate Change and Human Health Literature Portal

European Region/Country: European Country

Other European Country : France

Health Impact: ☒

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: Malaria

Model/Methodology: ☒

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Resource Type: ☒

format or standard characteristic of resource

Research Article

Timescale: ☒

time period studied

Medium-Term (10-50 years)